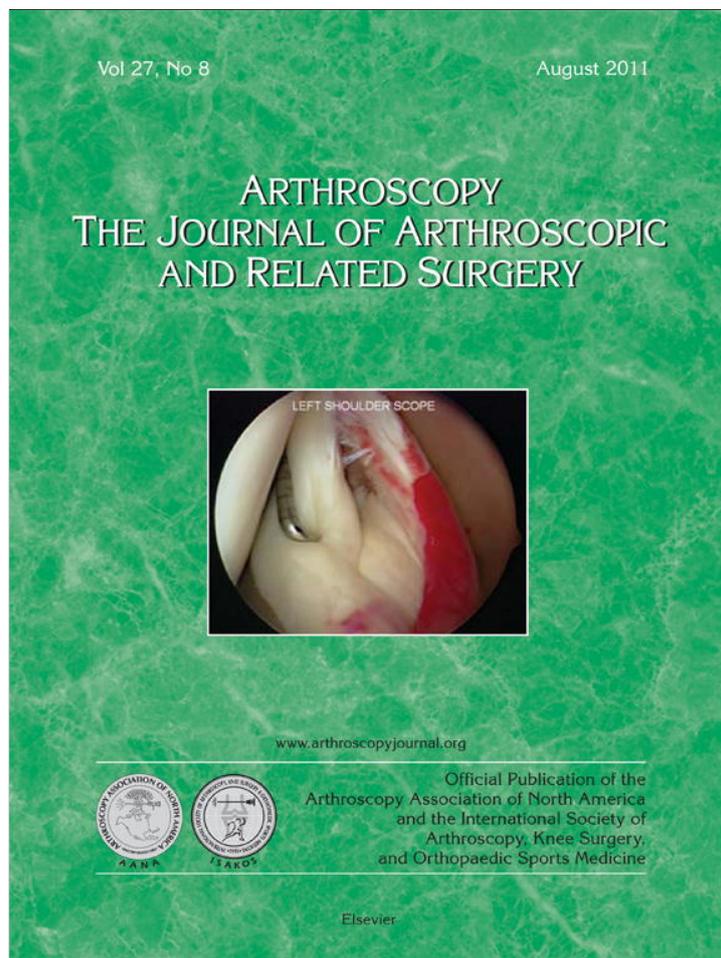


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## Case Report

## A Catastrophic Complication of Hip Arthroscopy

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**Abstract:** We present the case of an unusual and serious complication of hip arthroscopy due to the severance of the inferior gluteal artery. The lesion induced a severe anemic condition and the formation of a large pseudoaneurysm, which compressed the sciatic nerve and left permanent neurologic sequelae. To our knowledge, this is the first reported case of its kind. We also describe how to establish a safe posterior hip joint arthroscopic portal to avoid such a complication.

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**H**ip arthroscopy has become a successful methodology for treating various hip pathologies in selected patients. Complications occur in fewer than 5% of cases,<sup>1</sup> and these are most commonly nerve traction injuries, which normally have a full recovery.<sup>2</sup> The complication rate from portal placement is even lower, affecting only 0.6% of cases<sup>2</sup> and resulting in periarticular nerve and vessel damage. No complication has been reported to be potentially life-threatening or to leave significant permanent sequelae. We describe a hip arthroscopy complication that put the patient's life at risk and left a relevant neurologic impairment: an iatrogenic rupture of the inferior gluteal artery causing a pseudoaneurysm with a secondary severe sciatic nerve compression lesion.

## CASE REPORT

A 61-year-old woman was admitted to our hospital complaining of intense right buttock pain associated with an inability to walk or stand upright. The onset of

neurologic symptoms had occurred 3 days after the patient had undergone an arthroscopy of the right hip to treat symptomatic mild hip osteoarthritis. The arthroscopy had been performed 1 month before she came to us. The examination showed a painful swelling of her right buttock and marked neurologic impairment of the whole right lower limb. The Lasègue sign was positive at 30°, and Achilles and plantar midfoot reflexes were absent. A complete deficit of foot plantar flexion and dorsal flexion accompanied by anesthesia of the right foot was observed. Flexion of the knee was still possible, though very weak. No sphincter disturbances were present, nor were there signs of deep vein thrombosis.

The only clinical information available was an inferior abdomen computed tomography scan that showed a large hematoma involving the gluteus maximus muscle and the most proximal part of the right thigh. No electromyographic study of the lower limbs had been performed. An immediate complete blood count showed an alarming anemic condition (hemoglobin level, 7.2 mg/L), although the patient had received over 40 U of blood during the 4 weeks after arthroscopy.

The patient underwent arteriography of the right lower limb, showing a large pseudoaneurysm of the buttock due to a severance of the right inferior gluteal artery, which underwent immediate embolization (Fig 1). Electromyography showed axonotmesis of the right sciatic nerve, with complete denervation of the tributary muscles.

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*Received December 31, 2010; accepted February 9, 2011.*

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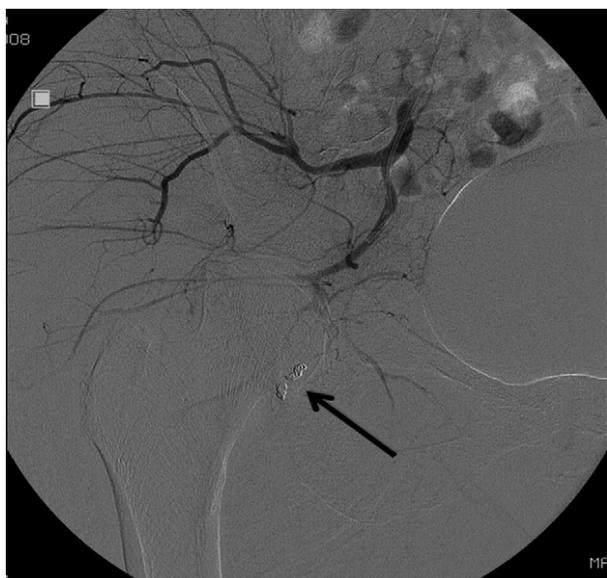
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*doi:10.1016/j.arthro.2011.02.012*

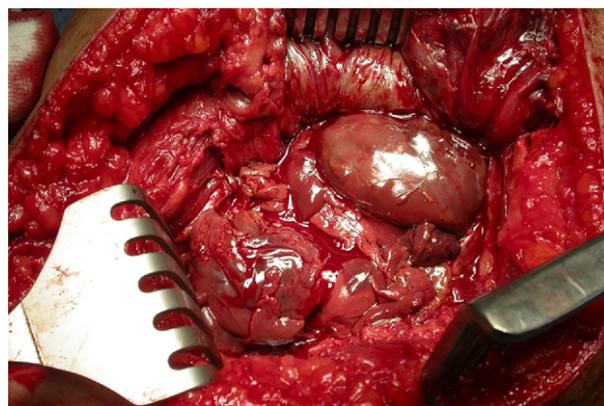
After 30 days, the hemoglobin level had markedly improved (14 mg/L) and a surgical exploration of the sciatic nerve was conducted. We removed a large hematoma that was compressing the nerve (Fig 2). The sciatic nerve appeared abnormal, surrounded by fibrotic tissue, so a careful and extensive neurolysis was performed. At 2 months after the operation, the patient regained valid active flexion of the knee, and after 4 months, she had acceptable plantar flexion of the ankle. After 8 months, she started to recover active dorsal flexion of the ankle. At last follow-up (2 years after the sciatic neurolysis), the patient has full knee flexion and almost complete active ankle range of motion. She walks without support with a moderate limp because of a 50% insufficiency of the tibialis anterior and extensor digitorum muscles.

## DISCUSSION

The iatrogenic lesion described was probably a result of incorrect placement of the posterolateral portal (PLP). The patient had 2 posterolateral scars, the most proximal being located where the conventional PLP is usually made. The second scar was in line with this but located about 3 cm more distally and was probably



**FIGURE 1.** Embolization of the inferior sacral artery (arrow), which had been severed probably as a result of incorrect PLP placement and the use of a sharp obturator. Embolization was performed through a catheter introduced into the common iliac artery.



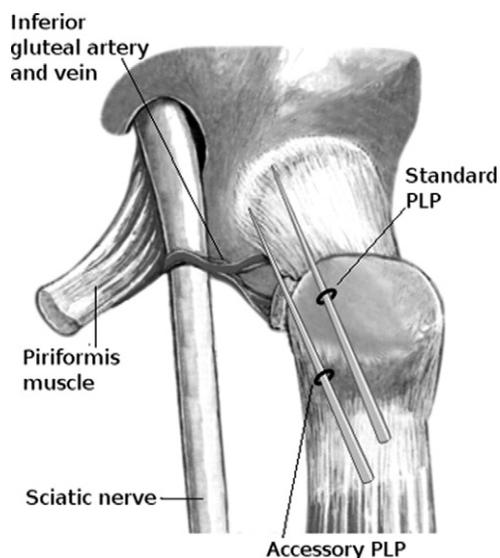
**FIGURE 2.** Large pseudoaneurysm of buttock, covering and compressing sciatic nerve, that had formed due to severance of inferior sacral artery during hip arthroscopy.

intended to be an accessory portal. The standard PLP is usually established above and slightly posterior to the greater trochanter. It penetrates both the gluteus medius and minimus before entering the lateral capsule at its posterior margin. Its course is superior and anterior to the piriformis tendon. At the level of the joint capsule, it lies closest to the sciatic nerve, at a mean distance of 22 cm,<sup>3</sup> whereas the distance from the deep branch of the medial circumflex artery is about 10 mm. For these reasons, the PLP is considered relatively safe. The accessory portal was approximately at the level of the inferior border of the piriformis tendon where the inferior gluteal artery lies.

In our case the most likely cause of the vascular lesion was that the arthroscopic cannula was placed too posteriorly, and a sharp obturator was used to try to pierce a probably thickened posterior joint capsule. Such an occurrence can usually be avoided by observing a few relatively simple safety measures (Table 1). The first is obviously the use of a blunt obturator. Simpson et al.<sup>4</sup> described a modification of the Seldinger technique for safe establishment of the PLP

**TABLE 1.** *Tips*

- When using the PLPs, there are structures that are at risk of damage (gluteal vessels and sciatic nerve); therefore correct portal placement is mandatory.
- Use a needle to penetrate the joint capsule, and check its position with radiographs.
- Insert a guidewire through the needle.
- Insert the arthroscope, avoiding the use of a sharp obturator.
- Be receptive to tactile feedback—avoid using excessive force.



**FIGURE 3.** Standard posterolateral and inferior posterolateral accessory arthroscopic hip portals. The potential relations of the accessory portal with the inferior gluteal artery at the distal border of the piriformis tendon should be noted.

portal (Fig 3), which requires the use of a guidewire introduced through a spinal needle. A hip-access cannula and blunt obturator are carefully advanced over

the guidewire, with the assistance of intensifier imaging. Once the capsule is reached, the guidewire is gradually retracted and the cannula is pushed into the joint. Excessive force should never be applied to enter the joint space. The surgeon should be receptive to the characteristic tactile feedback<sup>4</sup> rather than relying purely on the visual feedback of the imaging intensifier monitor.

In conclusion, although hip arthroscopy is a valid and widely used procedure for a variety of hip conditions, the surgeon requires a high level of technical skill and experience if serious complications are to be avoided.<sup>2,5</sup>

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